In re Appln. of Jerome Daniel
Application No. 10/535,524
Response to Office Action of July 23, 2009

REMARKS

The following remarks are responsive to the Office Action of July 23, 2009 (*Office Action*).

At the time of the *Office Action*, claims 1-22 were pending. Claims 1, 4-5, 11, 13-16, 18, and 21-22 stand rejected under 35 U.S.C. §102(e) as being anticipated by Sibbald et al. (U.S. Patent No. 7,167,567, hereinafter "*Sibbald*"). Claims 6, 12, and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Sibbald*. Claims 19-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Sibbald* in view of Jot et al. (U.S. Patent No. 7,231,054, hereinafter "*Jot*"). Claims 2-3 and 7-10, while objected to as being dependent upon a rejected base claim, would be allowable if rewritten in independent form.

Applicant thanks the Examiner for the indication of allowable subject matter and for the non-finality of the *Office Action*. Applicant also thanks the Examiner for the fruitful Examiner Interview on October 14, a summary of which is included herein.

In response to the *Office Action* and in accordance with the Examiner Interview on October 14, amended claims and a discussion of the distinctions between the claims and the art of record in the *Application* are presented herein. Claims 1 and 21 are amended for clarity. New claims 23, 24, 25, and 26 are presented herein.

Claim Amendments

Claims 1 and 21 are amended for clarity in accordance with the discussion during the Examiner Interview. No new matter is introduced by these amendments. Applicant respectfully requests that the Examiner enter these amendments into the *Application*.

New Claims

New claims 23, 24, 25, and 26 are presented herein. No new matter is introduced by new claims 23, 24, 25, and 26.

New independent claim 23 includes elements similar to those included in claims 1, 2, and 3, and is therefore also supported by the specification as filed.

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New claim 24 depends from claim 23 and is supported by the specification as filed, for example at paragraph [0101] of US2006/0045275.

New claim 25 depends from claim 1 and is supported by the specification as filed, for example at paragraph [0101] of US2006/0045275.

New claim 26 depends from claim 21 and is supported by the specification as filed, for example at paragraph [0101] of US2006/0045275.

Rejection of claims 1, 4-5, 11, 13-16, 18, and 21-22 under 35 U.S.C. §102(e)

Claims 1, 4-5, 11, 13-16, 18, and 21-22 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Sibbald*. Applicant respectfully traverses these rejections for at least the following reasons.

Applicant notes that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) (MPEP 2131). Applicant also notes that "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Further, Applicant notes that "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Furthermore, Applicant notes that if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

With reference to claim 1, the Examiner asserted that *Sibbald* discloses (*Office Action*, p. 3):

> "a method of processing sound data, wherein, before a playback of the
> sound by a playback device: a) signals representative of at least one sound
> propagating in a three-dimensional space (col. 4, lines 15-29) and arising
> from a source situated at a first distance from a reference point are **coded
> so as to obtain a representation of the sound by components expressed
> in a base of spherical harmonics** of origin corresponding to said
> reference point (col. 3, line 56 through col. 4, line 11: filter coefficients are
> dependent on a distance between a sound source (i.e. loudspeaker playback
> device) and a listener's head (reference point) are calculated at a second
> distance of 1 meter; col. 8, lines 30-43: near-field effects being calculated

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using spherical **co-ordinates**), b) and a compensation of a near field effect
is applied to said components by **a filtering which is dependent on a
second distance** defining substantially, for a playback of the sound by said
playback device, a distance between a playback point and a point of
auditory perception (col. 3, line 56 through col. 4, line 11: filter
coefficients are dependent on a distance between a sound source (i.e.
loudspeaker playback device) and a listener's head (reference point) are
calculated at a second distance of 0.9 meter)".

Applicant respectfully disagrees with this assertion. To better illustrate the
distinctions between *Sibbald* and claim 1 of the present *Application*, claim 1 as amended in
accordance with the Examiner Interview of October 14 is presented below for reference,
annotated with reference to FIGs. 3, 4, and 7 also reproduced below for reference:

Claim 1 (as amended): A method of processing sound data for playback by
an ambisonic playback device, the method comprising:
a) encoding signals representative of at least one sound so as to obtain a
representation of the at least one sound propagating in a three-dimensional
space and arising from a source (*e.g., positioned at location 'M' in FIG. 3
and corresponding to point 'S' in FIG. 7*) situated at a first distance (*e.g.,
indicated as 'ρ' in FIG. 3 and FIG. 7*) from a reference point (*e.g., point 'O'
in FIG. 3*), the reference point corresponding to a point of auditory
perception (*e.g., point 'P' in FIG. 7*) of the at least one sound, the **encoded
representation of the sound being by components expressed in a base of
spherical harmonics, of origin corresponding to said reference point**;
and
b) applying a **compensation of a near field effect to said components
by a filtering which is dependent on a second distance** (*e.g., indicated as
'R' in FIG. 7*) representing a distance between a playback point (*e.g.,
indicated as 'HPi' in FIG. 7)* and a point of auditory perception (*e.g.,
indicated as 'P' in FIG. 7)* of the encoded representation of the at least one
sound, for a playback of the at least one sound by a playback device.

*1. Sibbald does not teach a representation of a sound by components expressed in a base
of spherical **harmonics** as claimed, at least because spherical harmonics are separate and
distinct from spherical **co-coordinates**.*

In the passage cited by the Examiner (see *Sibbald*, col. 8, lines 30-43), *Sibbald*
teaches that "in practice, the **positional data** is usually specified in spherical **co-ordinates**".
However, **positional data** is not equivalent to a **representation of the sound** as recited in
claim 1. Furthermore, spherical **co-ordinates** are separate and distinct from spherical
harmonics as recited in claim 1. As an illustration, following is a reproduction of FIG. 3 of

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the present *Application*. As described in p. 12 lines 32-33 of the present *Application* (paragraph [0083] of U.S. Patent Application Publication No. 2006/0045275), "FIG. 3 illustrates the parameters involved in the ambisonic representation, in **spherical coordinates**". As further described in p. 16 lines 26-31 of the present *Application* (paragraph [0100] of US2006/0045275), "[w]e consider a zone about an origin O (sphere of radius R) devoid of any acoustic source. We adopt a **system of spherical coordinates** in which each vector r from the origin O to a point of the sphere is described by an azimuth θ r , an elevation δ r and a radius r (corresponding to the distance from the origin O)." This is consistent with *Sibbald*'s disclosure of positional data specified in spherical co-ordinates including an angle of azimuth θ, an angle of elevation φ, and a distance *d* (See *Sibbald*, col. 8, lines 30-43). Thus, as used in both the present *Application* and in *Sibbald*, spherical **co-ordinates** refer to a representation of a **single point** in three dimensional space (e.g., point 'M' in FIG. 3 below), for example as an alternative to Cartesian coordinates (x,y,z).

FIG. 3
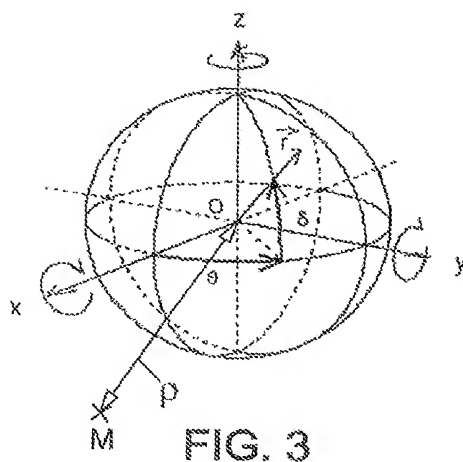
In contrast, spherical **harmonics**, as recited in claim 1, are used as a base to express components of a representation of **sound propagating** in a three-dimensional space. Applicant refers the Examiner to the present *Application* at p. 16 line 33 through p. 18 line 13 (paragraphs [0102]-[0109] of US2006/0045275) where spherical harmonics are discussed. Also reproduced below for reference is FIG. 4 of the present *Application*. As taught in the *Application*, "[s]pherical harmonics are **real functions** that are bounded, as represented in FIG. 4, as a function of the order m and of the indices n and σ. The light and dark parts correspond respectively to the positive and negative values of the **spherical harmonic**

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functions. The higher the order m, the higher the angular frequency (and hence the discrimination between functions)" (p. 18 lines 4-11, paragraph [0109] of US2006/0045275). *Sibbald* does not teach or suggest spherical harmonics, nor the representation of sound by components expressed in a base of spherical harmonics as recited in claim 1.


FIG. 4
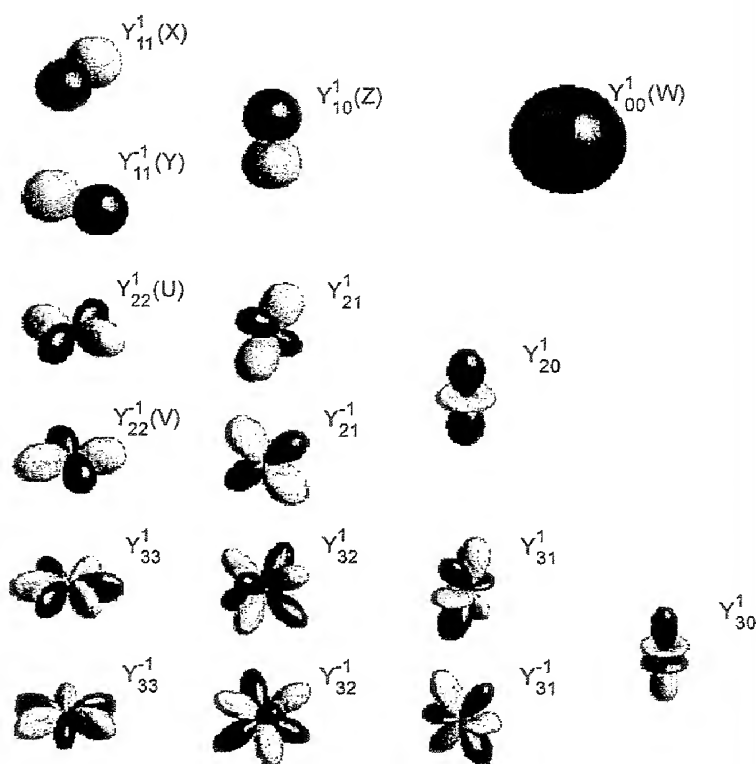
2.   *Filtering disclosed by Sibbald is separate and distinct from the filtering as claimed.*

Applicant refers the Examiner to FIG. 7 of the present *Application*, reproduced below for reference, where ρ represents the first distance as recited in claim 1, and the R represents the second distance as recited in claim 1. Applicant also notes that the filtering disclosed by *Sibbald* is dependent on "(a) required proximity, and (b) spatial position" (*Sibbald*, col. 4, lines 19-20), as opposed to "a distance between a playback point and a point of auditory perception" as recited in claim 1. *Sibbald* discloses "choosing a **position for the sound**

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source relative to the position of the head of a listener in use, [and] calculating the distance

from the chosen position of the sound source to respective ears of the listener" (*Sibbald*,

Abstract). Applicant respectfully submits that *Sibbald*'s required proximity and spatial

position are indicative of the spatial relationship between the **apparent sound source**

(corresponding to 'S' in FIG. 7 below) and the listener's head (corresponding to 'P' in FIG. 7

below), whereas claim 1 recites a distance between a **playback point** (e.g., loudspeaker,

'HPi' in FIG. 7 below) and a point of auditory perception (e.g., the listener's head, 'P' in

FIG. 7 below). *Sibbald*'s filtering is dependent on a distance which correlates with ρ as

illustrated in FIG. 7 below, whereas the filtering as recited in claim 1 is dependent on a

distance which correlates with **R** as illustrated in FIG. 7 below. For at least these reasons, the

filtering disclosed by *Sibbald* is separate and distinct from and not suggestive of the filtering

recited in claim 1.

FIG. 7
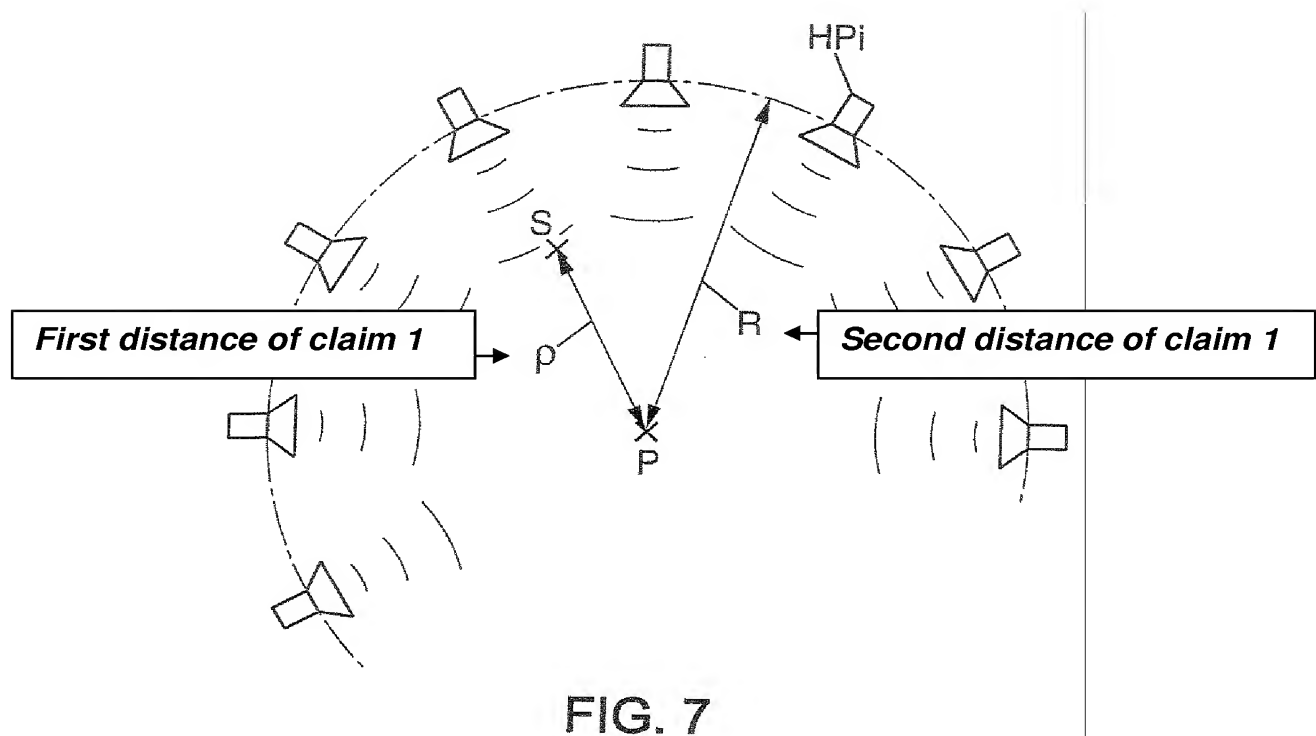
At least since *Sibbald* does not teach or suggest all the elements of claim 1, Applicant

respectfully submits that claim 1 is novel and nonobvious over the art of record in the

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Application. Applicant respectfully requests that the rejection of claim 1 be withdrawn and that claim 1 be allowed.

Claims 2-20 depend from claim 1. For at least the same reasons as those provided for claim 1, Applicant submits that claims 2-20 are novel and nonobvious over the art of record. Applicant respectfully requests that the rejections of claims 2-20 be withdrawn and that claims 2-20 be allowed.

Independent claim 21 includes similar features as discussed above with regard to independent claim 1. Accordingly, Applicant respectfully submits that similar arguments as those presented above with respect to claim 1 also apply to claim 21. Thus, for at least the same reasons as those provided for claim 1, Applicant submits that claim 21 is novel and nonobvious over the art of record. Applicant respectfully requests that the rejection of claim 21 be withdrawn and that claim 21 be allowed.

Claim 22 depends from claim 21. For at least the same reasons as those provided for claim 21, Applicant submits that claim 22 is novel and nonobvious over the art of record. Applicant respectfully requests that the rejection of claim 22 be withdrawn and that claim 22 be allowed.

New independent claim 23 recites elements similar to claims 1, 2, and 3. For at least the same reasons as those provided for claims 1, 2, and 3, Applicant submits that claim 23 is novel and nonobvious over the art of record. Applicant respectfully requests that claim 23 be allowed.

New dependent claims 24, 25, and 26 depend from independent claims 23, 1, and 21, respectively. For at least the same reasons as provided for their respective base claims, Applicant submits that claims 24, 25, and 26 are novel and nonobvious over the art of record. Applicant respectfully requests that claims 24, 25, and 26 be allowed.

Allowable Subject Matter

Applicant thanks the Examiner for the indication that claims 2-3 and 7-10, while objected to as being dependent upon a rejected base claim, would be allowable if rewritten in independent form. However, Applicant notes that these dependent claims are also allowable at least because of their dependence from independent claim 1, as discussed previously. Accordingly, withdrawal of the objection to claims 2-3 and 7-10 is respectfully requested.

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Conclusion

In view of the foregoing, Applicant submits that *Sibbald* does not disclose the claimed invention and that the pending claims are new and non-obvious over the art of record and general knowledge in the field. Applicant submits that all pending claims are in condition for allowance, and respectfully requests reconsideration and timely allowance of the pending claims. The Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call Applicant's undersigned representative.

Respectfully submitted,

/mark bergner/

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